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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/561,008	12/16/2005	Helmut Forstner	281973US6PCT	6034
22850	7590	03/31/2010		
OBLON, SPIVAK, MCCLELLAND MAIER & NEUSTADT, L.L.P. 1940 DUKE STREET ALEXANDRIA, VA 22314			EXAMINER ALANKO, ANITA KAREN	
			ART UNIT	PAPER NUMBER
			1792	
			NOTIFICATION DATE	DELIVERY MODE
			03/31/2010	ELECTRONIC

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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### Office Action Summary

**Application No.**

10/561,008

**Applicant(s)**

FORSTNER ET AL.

**Examiner**

Anita K. Alanko

**Art Unit**

1792

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 04 February 2010.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 36, 40, 44, 47, 49, 50 and 67-69 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 36, 40, 44, 47, 49, 50 and 67-69 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

**DETAILED ACTION**

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

***Claims 40 and 67 are rejected under 35 U.S.C. 103(a) as being unpatentable over  
Försnel in view of Babko-Malyi (US 2003/0106788 A1).***

Försnel discloses a method comprising the steps of:

arranging a plurality of nozzles 24 (for example, in one row, col.3, lines 10-12; col.5, lines 19-27), to direct a plasma 34 onto a region of the surface of a substrate from which a coating is to be removed (removal of silicon oil residues from metal surfaces, col.4, lines 47-50, since broadly interpreted residues form a coating that is desired to be removed; the region that is exposed to the plasma jet is the region from which the coating is removed since the etching species are provided by the plasma jet);

directing the plasma onto the region of the surface of the substrate from which the coating is to be removed (removal of silicon oil residues from metal surfaces, col.4, lines 47-50, since broadly interpreted residues form a coating that is desired to be removed),

producing a linear relative movement (arrow "A" in Fig.2, col. 5, lines 46-53, movement along the surface of the workpiece to be treated) in a certain direction ("A") between the nozzles and the substrate to thereby remove a coating from the substrate over a width/area (of the plasma curtain, col.5, line 50).

As to claim 67, Försnel fails to disclose the use of an (elongated) slit-shaped source. It would have been an obvious matter of design choice to use a slit-shaped source, since such a modification would have involved a mere change in the size of a component. A change of size is generally recognized as being within the ordinary level of skill in the art. *In re Dailey*, 357 F.2<sup>nd</sup> 669, 149 USPQ 1966.

Still further, Babko-Malyi teaches that it is known to change the shapes of openings to either slits and/or holes (paragraph [0038] last line). It would have been obvious to one with ordinary skill in the art to use slits in the method of Försnel in order to direct the plasma in a desired shape to correspond with a desired shape of coating removal, as is useful as taught by Babko-Malyi to yield the predictable result of coating removal.

It would have been obvious to set the slit-shaped nozzle such that the direction of elongation of the slit has a certain orientation direction on the surface of the substrate because Försnel teaches that the location and size of the surface area to be treated can be controlled precisely by adjusting the position of the workpiece in relation to the jet generator as required (col.5, lines 22-27). Thus, although Försnel fails to disclose how to adjust the relative positions, they are nonetheless set so that the desired area of coating removal is achieved. The nozzle opening, including a slit in the modified method of Försnel, would be set in a perpendicular direction (a ninety degree angle) to the plane of the workpiece as depicted in Fig.1, and thus necessarily has a certain orientation direction on the surface of the substrate when the coating is removed.

As to claim 67, Försnel discloses relative movement between the plasma and the workpiece (col.3, lines 20-21), and that the location and size of the surface area to be treated can

be controlled by adjusting the position of the workpiece 35 relative to the plasma 100 as required (col.5, lines 23-27).

The shape of the opening, the angle of the plasma and the relative movement all affect the introduction of plasma to the substrate and the type of coating removal achieved, and thus are result-effective variables. It would have been obvious to one with ordinary skill in the art that in the modified method of Förnsnel to include relative movement between the slit shaped nozzles and the substrate as cited in order to remove the desired coating as required by the final product desired because the relative movement appears to reflect a result-effective variable which can be optimized. See MPEP 2144.05 IIB.

As to claim 40, Förnsnel fails to explicitly disclose the shape of the workpiece (col.2, lines 5-11). However, workpieces with straight edges and corners are well known. It would have been obvious to include movement parallel to the edge of the substrate in the method of Förnsnel because Förnsnel discloses parallel rows of plasma jets (Fig.2), which suggests to have uniform removal by movement as cited.

***Claim 68 and its dependent claims, claims 36, 44, 49-50, are rejected under 35 U.S.C. 103(a) as being unpatentable over Förnsnel in view of Babko-Malyi (US 2003/0106788 A1).***

The discussion of modified Förnsnel from above is repeated here.

As to claim 68, Förnsnel fails to disclose pivoting the row of nozzles. Workpieces with corners are well known and processing parallel to edges is obvious, as discussed above with claim 40. The processing of workpieces at corners can occur in a small, finite number of ways. One way could be by movement parallel to a top edge, and then movement upwards or

downwards, followed by more parallel movement. Alternatively, one could pivot the nozzles as cited.

The claim would have been obvious because a person of ordinary skill has good reason to pursue the known options with his or her technical grasp. If this leads to the anticipated success, it is likely the product not of innovation but of ordinary skill and common sense.

It is clear that a workpiece that has corners needs to have coatings removed from the corners as well as from non-corner regions of the workpiece.

There are a finite number of identified predictable potential solutions, indexing movement at the corners or pivoting.

Thus, one of ordinary skill in the art could have pursued the known potential options with a reasonable expectation of success.

As to claim 36, Försnel discloses to change a coverage width of plasma and substrate by deactivating or activating plasma beams (col.5, lines 51-53).

As to claim 44, Försnel fails to explicitly disclose the shape of the workpiece (col.2, lines 5-11). However, workpieces with end edges or faces are well known. It would have been obvious to include movement normal to the end of the substrate as cited in the method of Försnel because it is obvious to remove coatings that are not needed in the final product, such as from the end, and pivoting to the normal direction is within the scope of one skilled in the art.

As to claims 49-50, it would have been obvious to use the method of Försnel to remove the cited coatings because they are conventionally removed by plasma etching and is advantageous in that reactant species can be optimized depending on the type of coating to be removed.

*Claim 69 is rejected under 35 U.S.C. 103(a) as being unpatentable over Försnel in view of Babko-Malyi (US 2003/0106788 A1), and Siniaguine et al (US 6,238,587 B1).*

The discussion of modified Försnel from above is repeated here.

As to claim 68, Försnel fails to disclose pivoting the row of nozzles. Workpieces with corners are well known and processing parallel to edges is obvious, as discussed above with claim 40. The processing of workpieces at corners can occur in a small, finite number of ways. One way could be by movement parallel to a top edge, and then movement upwards or downwards, followed by more parallel movement. Alternatively, one could pivot the nozzles as cited.

The claim would have been obvious because a person of ordinary skill has good reason to pursue the known options with his or her technical grasp. If this leads to the anticipated success, it is likely the product not of innovation but of ordinary skill and common sense.

It is clear that a workpiece that has corners needs to have coatings removed from the corners as well as from non-corner regions of the workpiece.

There are a finite number of identified predictable potential solutions, indexing movement at the corners or pivoting.

Thus, one of ordinary skill in the art could have pursued the known potential options with a reasonable expectation of success.

As to amended claim 69, Försnel discloses to set the nozzle at a ninety degree angle relative to the plane of the workpiece (as depicted in Fig.2), which is at a zero degree angle about an axis perpendicular to the substrate. However, Försnel fails to disclose to pivot to another (different) angle about the axis perpendicular to the substrate.

Siniaguine teaches that it is useful to vary the angle of the plasma jet relative to the coating to be removed (col.3, lines 27-41) in order to influence the conditions of the plasma flowing over the surface, and thereby influence coating removal. It would have been obvious to one with ordinary skill in the art to vary the angle during pivoting as cited in the method of Försnel because Siniaguine teaches that varying the angle is known and useful, and such is expected to yield the predictable result of coating removal.

The shape of the opening, the angle of the plasma and the relative movement all affect the introduction of plasma to the substrate, the plasma footprint and the type of coating removal achieved, and thus are result-effective variables. Försnel teaches that it is desired to vary the relative position of the workpiece and the plasma jet (col.5, lines 23-27), in other words, to vary the plasma footprint. It would have been obvious to one with ordinary skill in the art that in the modified method of Försnel to include relative movement between the slit shaped nozzles (at the cited angles to perpendicular) and the substrate as cited in order to remove the desired coating as required by the final product desired because the relative movement appears to reflect a result-effective variable which can be optimized. See MPEP 2144.05 IIB.

***Claim 47 is rejected under 35 U.S.C. 103(a) as being unpatentable over Försnel in view of Babko-Malyi (US 2003/0106788 A1) and Tanaka et al (US 2002/0008082 A1).***

The discussion of modified Försnel from above is repeated here.

As to claim 47, Försnel fails to explicitly disclose a discharge device. Tanaka teaches that suctioning or evacuating by-products (by 60a) is useful when using a plasma jet (Fig.2) in order to achieve high accuracy in coating removal. It would have been obvious to use a



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discharge device in the method of Försnel because Tanaka teaches that it is useful to achieve high accuracy in coating removal.

### ***Response to Amendment***

The reliance upon Carr is removed since the limitation about rotating has been deleted from the claims. The 35 USC 112 rejection over claim 46 is withdrawn since the claim has been cancelled.

Claims 40 and 67 are rejected under 35 U.S.C. 103(a) as being unpatentable over Försnel in view of Babko-Malyi (US 2003/0106788 A1).

Claim 68 and its dependent claims, claims 36, 44, 49-50, are rejected under 35 U.S.C. 103(a) as being unpatentable over Försnel in view of Babko-Malyi (US 2003/0106788 A1).

Claim 69 is rejected under 35 U.S.C. 103(a) as being unpatentable over Försnel in view of Babko-Malyi (US 2003/0106788 A1), and Siniaguine et al (US 6,238,587 B1).

Claim 47 is rejected under 35 U.S.C. 103(a) as being unpatentable over Försnel in view of Babko-Malyi (US 2003/0106788 A1) and Tanaka et al (US 2002/0008082 A1).

### ***Response to Arguments***

Applicant's arguments filed 2/4/10 and 1/11/10 have been fully considered but they are not persuasive, to the extent they still apply.

Applicant argues that an area of coating removal for a slit shaped nozzle is “set” at a certain angle being dependent on the orientation of the elongation of the slit. In response, the area is necessarily set no matter which angle is chosen, even the angle chosen by Försnel. Only

the area that is exposed to the plasma jet is removed; areas not exposed to the plasma jet are not removed.

Applicant argues that it is not necessary to cite a change in width. In response, even if this was cited, it would still be obvious because changing angles and relative movement necessarily changes the plasma footprint, which is within the scope of one skilled in the art to optimize for best results. This is akin to using a water hose to water the garden, or a sprinkler with a line of nozzles to water the lawn. One with ordinary skill in the art is able to vary the angle at which the water is discharged from the hose (nozzle) along with relative movement (walking with the hose having running water) to achieve the desired area of processing (the area of the garden that gets watered). Similarly, when working with plasma jets, it is within the scope of one skilled in the art to vary angle and movement, and thus the plasma footprint of the plasma jet/nozzles for best results.

As to claims 68-69, pivoting at angles is also obvious, as discussed in the rejection above. Continuing the analogy above, having a sprinkler with one row of nozzles and trying to water the corner of the lawn, there are a finite number of ways to do that – indexing (walking back and forth with the sprinkler in hand horizontally and then moving upwards or downwards) or pivoting at different angles (approaching the corner from one edge and leaving from the other edge and pivoting the sprinkler while you walk). Both are obvious to do, as discussed in the rejection above.

### ***Conclusion***

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The cited art shows methods of processing with plasma jets/torches.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Anita K. Alanko whose telephone number is 571-272-1458. The examiner can normally be reached on Mon-Fri until 3:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nadine Norton can be reached on 571-272-1465. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Anita K Alanko/  
Primary Examiner, Art Unit 1792